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10/627,506	07/25/2003	Hardayal Singh Gill	HIT1P036/HSJ9-2003-0164US	6933
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Zilka-Kotab, PC P.O. BOX 721120 SAN JOSE, CA 95172-1120			EXAMINER MILLER, BRIAN E	
			ART UNIT	PAPER NUMBER
			2627	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

**Application No.**

10/627,506

**Applicant(s)**

GILL, HARDAYAL SINGH

**Examiner**

Brian E. Miller

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 3/19/07.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) 4-6, 8, 19-22 and 28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1-3, 7, 9-18, 23-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-28 are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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Claims 1-28 are pending with claims 4-6, 8, 19-22, 28 withdrawn from consideration.

***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/19/07 has been entered.

***Claim Objections***

2. Claims 12-15, 26-27 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. There is no additional structure to distinguish the recited type of head, thus the claim(s) is not considered to further limit the parent claim.

3. Claims 2-3, 7, 9-15, 17-18, 23-27 are objected to because of the following informalities: all the above claims are dependent claims and the preamble should recite "The head" as opposed to "A head" as presently recited. Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 9-11, 14-16, 23-25, 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pinarbasi (US 6,460,243) in view of Gill (US 6,219,208). (As per claims 1 & 16) Pinarbasi discloses a magnetic head, as shown in at least FIG. 11, comprising: a SV sensor 130 and a pair of compression layers 142 positioned towards opposite track edges of the sensor, the compression layers providing compressive stress to the sensor (see col. 2, lines 44-49); (as per claims 9 & 23) further comprising hard bias layers 140, 144 positioned below the compression layers (as seen in the FIG.); (as per claims 10 & 24) further comprising shield layers S1, S2 positioned above and below the sensor, and at least one electrically insulative layer G1, G2 positioned adjacent each of the compression layers for preventing conduction of electricity through the compression layers from one shield layer to the other shield layer; (as per claims 11 & 25) further comprising shield layers S1, S2 positioned above and below the sensor, and at least one electrically insulative layer G1, G2 positioned adjacent each of the compression layers for preventing conduction of electricity through the compression layers from the sensor to one of the shield layers.

Pinarbasi, however, is expressly silent as to the SV sensor employing an AP pinned layer structure, as commonly known in the art, however, Gill discloses in FIG. 14, film “302” encompass the well known structure, which includes at least two pinned layers 306, 308, having magnetic moments that are self-pinned antiparallel to each other, the pinned layers being separated by an AP coupling layer 304. From this teaching, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have provided the AP

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pinned structure as described above into the SV sensor of Pinarbasi, as taught by Gill. The motivation would have been: by strong antiparallel coupling between the first and second antiparallel pinned layers 306 and 308 the magnetic moment 312 of the second AP pinned layer is pinned antiparallel to the magnetic moment 310. Accordingly, the magnetic moments 218 and 312 are in phase for enabling spin valve effects that are additive on each side of the free layer structure 202, providing a more responsive MR head. With respect to claims 14-15 (and similarly for claims 26-27) reference to “wherein the head is...” is considered to not add patentable weight to the claims because no additional structure has been set forth which would distinguish between these different MR head types and thus these claims are rejected as Pinarbasi is considered to encompass these types.

6. Claims 1-3, 7, 9-18, 23-27 rejected under 35 U.S.C. 103(a) as being unpatentable over Kanno (US 6,359,760) in view of Gill (US 6,219,208). (As per claims 1 & 16) Kanno discloses a magnetic head, as shown primarily in FIGs. 1-2, comprising: a sensor having a pair of compression layers 23 (38) positioned towards opposite track edges of the sensor, the compression layers providing compressive stress to the sensor (see col. 5, lines 9-25); (as per claims 2 & 17) wherein the compression layers are constructed of metal, i.e., Cr; (as per claim 7) wherein the compression layers are positioned substantially outside the track edges of the sensor (as shown in the FIGs.); (as per claims 9 & 23) further comprising hard bias layers positioned towards opposite track edges of the sensor, the compression layers being positioned above the hard bias layers; (as per claims 12 & 26); wherein the head forms part of a GMR head; (as per claim 14) wherein the head forms part of a CIP GMR sensor.

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Kanno, however, is expressly silent as to the SV sensor employing an AP pinned layer structure, as commonly known in the art, however, Gill discloses in FIG. 14, film “302” encompass the well known structure, which includes at least two pinned layers 306, 308, having magnetic moments that are self-pinned antiparallel to each other, the pinned layers being separated by an AP coupling layer 304. From this teaching, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have provided the AP pinned structure as described above into the SV sensor of Kanno, as taught by Gill. The motivation would have been: by strong antiparallel coupling between the first and second antiparallel pinned layers 306 and 308 the magnetic moment 312 of the second AP pinned layer is pinned antiparallel to the magnetic moment 310. Accordingly, the magnetic moments 218 and 312 are in phase for enabling spin valve effects that are additive on each side of the free layer structure 202, providing a more responsive MR head.

Kanno is further silent as to (a) the compression layer being rhodium; (b) shield layers above and below the sensor and insulation layers between the shield layers and the compression layers; (c) the MR sensor being a CPP or tunnel valve type. With respect to (b) and claims 10-11 & 24-25, Gill discloses shields S1, S2 above and below the sensor and insulative layers G1, G2, as shown in at least FIG. 11. It is noted that shield layers and insulative gap layers are typically convention in magnetic head MR sensors, and would have been obvious to have provided such to the sensor of Kanno for known advantages.

With respect to the compression layers being rhodium, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have substituted the Cr layer taught by Kanno with an equivalent similar material, e.g., rhodium. The motivation would have been:

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lacking any unobvious or unexpected results, substituting one known material for another material with similar characteristics, would have resulted through routine engineering experimentation and/or optimization. Furthermore, it has been held to be within the general knowledge of a skilled artisan to select a known material on the basis of its suitability for the intended use as a matter of design choice; see *In re Leshin*, 125 USPQ 416 (CCPA 1960); *In re Aller*, 105 USPQ 233 (CCPA 1955), regarding these matters.

### ***Response to Arguments***

7. Applicant's arguments filed 3/19/07 have been fully considered but they are not persuasive.

A...Applicants' 37 CFR § 1.131 declaration filed 2/23/07, has been considered and overcomes the rejections to claims 2-3, 7, 12-13, 17-18 & 26 and set forth by applicant. Because the declaration cannot overcome claims 9-11, 14-15, 23-25, 27, these rejections are maintained as previously set forth. Of course independent claims 1 & 16 are rejected with these claims as well.

B...Newly cited reference to Kanno is considered to encompass the "compression layers" as described, *supra*.

### ***Conclusion***

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian E. Miller whose telephone number is (571) 272-7578. The examiner can normally be reached on M-TH 6:30am-4:00pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T. Nguyen can be reached on (571) 272-7579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>.

Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to read 'B E Miller', with a stylized flourish at the end.

**Brian E. Miller**  
**Primary Examiner**  
**Art Unit 2627**

BEM  
May 28, 2007